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SUMMARY UNITED STATES EVALUATION OF THE CURRENT SOVIET BLOC POSITION ON COMMUNICATIONS EQUIPMENT

1. The Sino-Soviet Bloc has expanded its telecommunications system to a minor degree since the 1958 COCOM List Review, but the overall situation has not changed significantly. Bloc radio relay and line telecommunications systems, particularly in the USSR and Communist China, are not adequate for direct and indirect military requirements in the event of major hostilities. This inadequancy, resulting from the shortage of communications cable and modern communications equipment, will persist until such time as the means of production are modernized and output increased.

2. The military demand for more and better telecommunications service in the Bloc is acute. The European Satellites and European USSR have somewhat better service than the very much larger areas of the remainder of the USSR and Communist China. With particular reference to the USSR, telecommunications resources east of the Urals are thin, obsolete, and unreliable. Landlines are mainly overhead open wire. There are few overhead or underground cables. These meager resources are complemented by the heavy use of high-frequency, point-to-point radio which spans long distances but does so at the cost of reliability and freedom from interference. Telecommunication facilities in the Soviet Artic north of the trans-Siberian railway are extremely limited. The systems of the European Satellites lack modern equipment and the degree of intra-Bloc integration desired by the USSR. Communist China has made little progress in expansion or modernization of its relatively primitive telecommunications system.

3. In the build-up of the electronics industry of the Soviet Bloc, it appears that the USSR has assigned highest priorities to the development of air defense, guided missile, and electronic countermeasures (ECM) capabilities. The industries of East Germany, Czechoslovakia, Hungary and Poland have contributed to Soviet efforts in these fields and a high degree of competence has been achieved in some areas of application. However, the degree of progress in these and other fields has been uneven because of difficulties in accommodating massive and conflicting demands on developmental and production resources. The shortcomings of the telecommunications system have been possibly the most serious result of this situation. Point-to-point microwave, airborne communications equipments and electronic digital computers constitute three of the weakest sectors of Bloc production of military electronics. The improvement and expansion of these and other telecommunications capabilities will be determined by the ability of the Bloc communications equipment industry to overcome present deficiencies in the design, engineering, and series production of equipments.

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4. The wire and radio telecommunication systems of the Sino-Soviet Bloc can be characterized as "civil" systems only in a residual sense. Military needs are predominant in their design and use. Police, political, and economic governmental activities absorb most of the residual capacities, with consumer demand served only to a limited extent. The Soviet Bloc has been concentrating on the establishment of an effective high-speed, high-capacity, reliable telecommunications system of command and control of its long-range bomber bases, its fighter defense network, and its guided missiles programs. For these purposes, and also for the effective control and supply of its ground, naval, and tactical air forces, an extensive system of high-frequency line, radio relay, and scatter communications, secure against jamming and meteorological interference, is required. Any modern long-range communications system of this kind depends heavily on scatter, radio relay, coaxial cable, multiconductor cable, and their associated equipments. Because of the great distances involved, these equipments are required by the Bloc in very large quantities. In comparison with these qualitative and quantitative needs, present production is seriously inadequate. However, Soviet capability has been increasing to the extent that they now have in operation some equipment for long distance communications other than long distance high frequency radio, such as multiconductor and coaxial cable, scatter and microwave radio relay communication systems. It is almost certain that at least during the course of the Seven Year Plan (1959-65) these alternative media will be provided at an accelerated rate. As they replace the medium of high frequency radio, the Soviet ability to exercise jamming capability likewise will increase at an accelerated rate.

5. The Bloc communications equipment industry labors under shortages of modern production machinery and some materials for communications cable, and under difficulties in the design and engineering of the more complex types of radio relay equipment. There has been mass production of radio communications equipment for use in military land, sea, and air operations, some of which has been exported (for reasons of political advantage) to non-Bloc countries, but a very high proportion of this production has consisted of equipment which is considered obsolete by Western standards. Much of the communications equipment still used by the Soviet armed forces is characterized either by restricted channel capacity which creates a vulnerability to saturation, or by operation within a narrow frequency range which creates a vulnerability to jamming and self-interference. In many cases, both of these defects are present. The use of such equipment has put severe limitations on the entire Soviet air defense system, and in recent years the USSR has placed emphasis on the production of multichannel apparatus operating at microwave frequencies. The results of this program have not been satisfactory. Although it is reported that use of radio relay (including microwave) communications equipment by the Soviet armed forces is now increasing, the volume of production in the USSR and elsewhere in the Soviet Bloc is not adequate to satisfy all military requirements. This is evident not only from official criticisms in Bloc military and technical periodical literature,

but from the continued and insistent Bloc attempts to obtain Free World coaxial and multiconductor cable, radio relay and radio link equipment in VHF and UHF bands, and associated terminal equipment for channel multiplication over wide band systems.

6. Bloc capabilities in specific areas of electronic components and equipments cannot be generalized to provide a measure of the general state of the art within the Bloc. There is ample evidence that the Soviet electronics program is not completely balanced in its ability to meet its own military requirements. Moreover, in cases where Soviet official claims can be checked, numerous shortcomings emerge either in the validity of the information or the universality of its application. Conclusive information compels the conclusion that the presence of a high degree of sophistication in one sphere of electronics neither implies nor demonstrates an equal degree of capability in other technological areas or in the ability of the electronic production base to meet increasingly heavy demands on reliability and quantity production.

7. Similarly, evidence of Soviet theoretical capabilities cannot be uncritically accepted as a reliable indication of production engineering or operating capabilities. Soviet papers delivered at international conferences, and articles in their journals almost exclusively are limited to theoretical derivations or comparisons of theoretical expectations with empirically observed results in one particular case. This type of information becomes available at a fairly early stage of product development and difficult problems remain to be met between this stage and the packaging of the item, the shake-down tests, the establishment of a series production run, with adequate reliability characteristics, and the ability to utilize equipment operationally.